



Integrated High Speed Dome Camera

ESD-370



Indoor Dome

User's Manual

## **Notice**

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## **Important Information**

Before proceeding, please read and observe all instructions and warnings in this manual. Retain this manual with the original bill of sale for future reference and, if necessary, warranty service. When unpacking your unit, check for missing or damaged items. If any item is missing, or if damage is evident, **DO NOT INSTALL OR OPERATE THIS PRODUCT**. Contact your dealer for assistance.

## Cautions

- **Handle the camera carefully**  
Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handling or storage.
- **Do not disassemble the camera**  
To prevent electric shock, do not remove screws or covers. There are no user serviceable parts inside. Ask a qualified service person for servicing.
- **Do not block cooling holes on the bracket**  
This camera has a cooling fan inside. Blocking the cooling holes leads to build up of heat the camera and may cause malfunction.
- **Do not operate the camera beyond the specified temperature, humidity or power source ratings**  
Use the camera under conditions where temperature is between 0°C ~ 40°C (32°F ~ 104°F), and humidity is below 90%.
- **Do not expose the camera to rain or moisture, or try to operated it in wet areas**  
This product is designed for indoor use or locations where it is protected from rain and moisture. Turn the power off immediately if the camera is wet and ask a qualified service person for servicing. Moisture can damage the camera and also create the danger of electric shock.
- **Do not use strong or abrasive detergents when cleaning the camera body**  
Use a dry cloth to clean the camera when dirty. In case the dirt is hard to remove, use a mild detergent and wipe gently.
- **Never face the camera towards the sun**  
Do not aim the camera at bright objects. Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise, the camera may be smeared or damaged.

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## 1. Overview

ESD-370 is a new subcompact integrated high speed dome camera designed to deliver superb performance and durability with an intelligent and stylish housing that is suitable in any security and surveillance installation. ESD-370 series dome cameras support one cabling for easy installation, and can be integrated with CCTV products, such as DVRs, Control Keyboards, and CCTV accessories for a total surveillance solution.

The Integrated High Speed Dome Camera provides two models of new generation advanced DSP color camera:

- DR Model: 23x optical zoom multiply 12x digital magnifier
- S Model: 22x optical zoom multiply 12x digital magnifier

The dome delivers the power of 312x zoom to allow dome cameras capture clear image in the distance. Continuous Auto Focus, Back Light Compensation, Auto Exposure, Digital Slow Shutter functions are provided for clear and high quality image. IR cut filter removable ensures 24 hours operation; more Privacy Masks are specially designed to avoid any intrusive monitoring at specific region; Wide Dynamic Range function, are some of the salient features incorporated to fit your needs. The Home function allows user to specify a preset position as the 'home position' or functions (Sequence/Auto-pan/Cruise), dome camera can come back to home position or functions when the user stops to control the camera for a user defined period of time. Additionally, Scheduling function, the unique feature, enables users to program a preset point or function (Sequence/Auto-pan/Cruise) automatically actions in certain period of time.

The dome provides variable pan/tilt speeds ranging from a fast patrol of 400° per second to a slow ramble of 5° per second with 0.225° pan accuracy for fast and accurate tracking ability. The 360° endless rotation and -10°~190° tilt travel makes tracking the object passing directly beneath the dome. Maximum 256 preset points can be programmed for precise location of target areas, and you can also define 8 sequence, 4 auto-pan and 1 cruise routes for the camera to operate automatically. RS-485 communication port is available for remote control purposes.

The Integrated High Speed Dome Camera provides 8 alarm inputs and 2 alarm output, and the smart alarm management mechanism can be programmed through OSD setup menu; certain function (Preset/Sequence/Auto-Pan/Cruise) can be activated when an

alarm is triggered.

Large set of built-in protocols provide connectivity to other surveillance systems. The built-in protocols include ELMO, Pelco, VCL, Philips, AD-422 (Manchester), etc, which allow the Integrated High Speed Dome Camera series to be integrated with other suppliers' surveillance systems.

Dependability and ultra high reliability are key factors in the speed dome design cycle. Every speed dome is assembled with meticulous care and thorough testing at our ISO 9001 compliant factory. High performance, reliability, and reasonably pricing make this speed dome to be an ideal solution to your tough surveillance requirement.

## **1.1 Product Features**

### **Precise and Accurate Tracking**

- Auto Calibration
- Scheduling Functions
- Pan driver accuracy of 0.225°
- Preset speed up to 400°/sec.
- Pan & Tilt proportional to Zoom Ratio
- 256 Preset Position/8 Sequence /4 Auto-Pan /1 Cruise

### **Day/Night Features**

- Removable IR Cut Filter (DR Model)

### **Low-Light Applications**

- Minimum illumination 0.01 Lux
- Digital Slow Shutter
- Electronic Shutter

### **Perfect Contrast Solution for High Image Quality**

- Wide Dynamic Range (DR Model)
- Auto White Balance
- Auto Gain Control
- Backlight Compensation
- Auto Iris Control

### **Multiple Built-in Protocols Enhanced High Compatibility**

- ELMO
- Pelco D & P
- VCL
- Philip

- AD/AD-422
- Chipper

### **Privacy Mask for Privacy Protection**

- Up to 24 privacy zones of camera view programmable

### **Dynamic Dome Configuration**

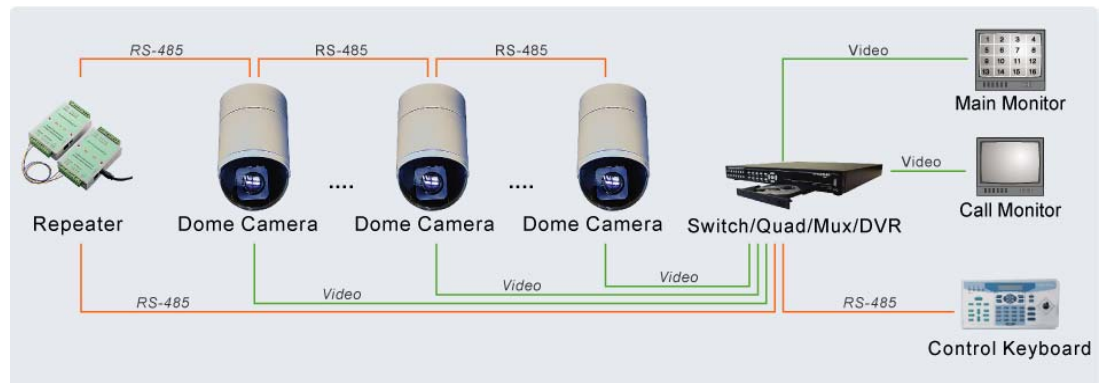
- Flexible In/Outdoor mountings
- Compact lightweight design for easy installation
- Weather resistant housing for temperature, sun ray, and rain

### **Integrated with Web, Enhanced Internet Capability (Optional)**

- Remote monitoring operation/system configuration/software upgrade
- Include Window active applications

## **1.2 Product Application**

Connect the dome camera to other devices as shown in the diagram to complete a video surveillance solution.



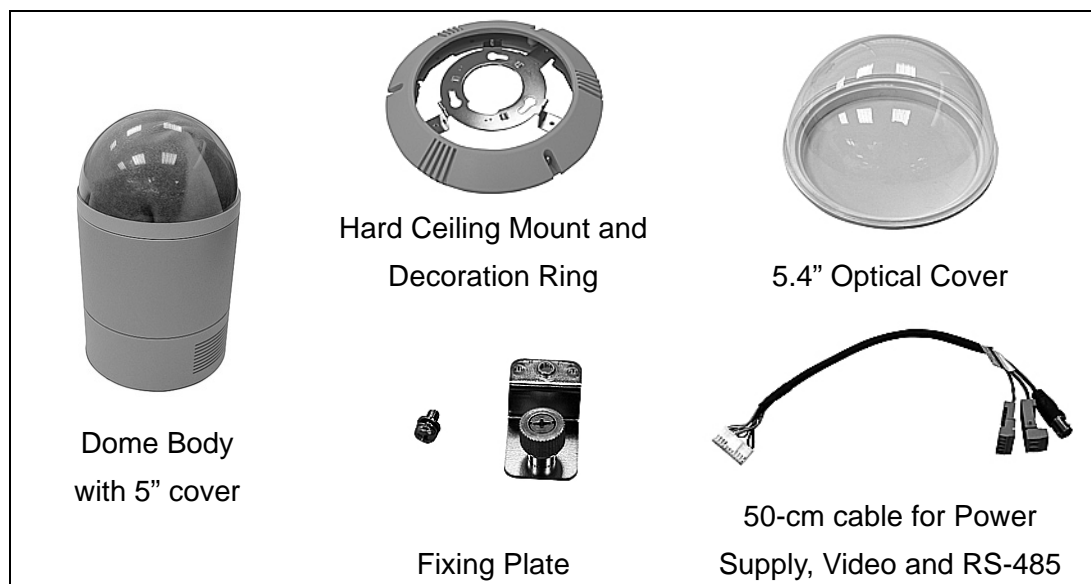


## 2. Connecting the High Speed Dome

Please refer to the following sections to connect, set and operate the dome camera. In order to control the integrated high speed dome, basically a control keyboard or other control device is required.

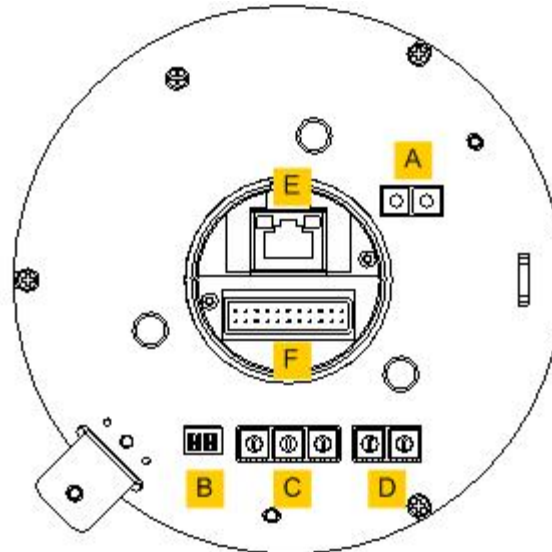
### 2.1 Package Content

Before proceeding, please check the box contains the items listed here. If any item is missing, or if damage is evident, DO NOT install or operate the product and contact your dealer for assistance.



## 2.2 Switch Definition

First of all, configuring the dome ID and communication protocol is required before connecting the dome camera to other devices. The switches used for configuring these settings are located on the bottom of the dome camera.



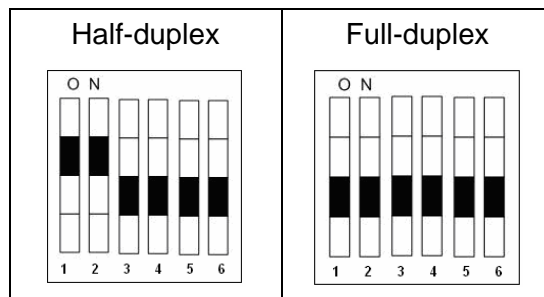
Indoor Dome

A	Reserved
B	RS-485 Setting
C	Dome ID Setting
D	Dome Control Protocol
E	N/A
F	22-Pin Connector

## 2.3 RS-485 Setting

The RS-485 setting default is half-duplex, please do not change without qualified specialist or supplier's RS-485 is the interface that communicates the dome camera and its control device; for this reason, the RS-485 setup of the dome and the control device must be the same. The RS-485 default setting is half-duplex.

**RS-485 Communication**



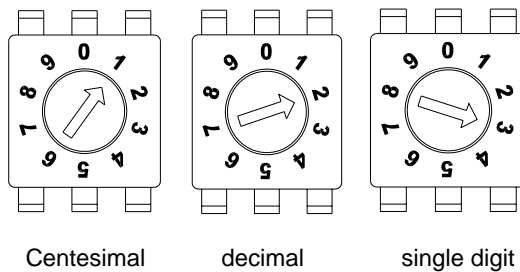
Pin 3	Termination
Pin 4	Line Lock
Pin 5	Set Factory Default
Pin 6	Reserved

## 2.4 Dome ID Setting

Use the switch to change your speed dome ID by turning the arrow to the desired number respectively. For instance, if the dome ID is 123, the ID switch should be set as below.



**NOTE:** No two domes should be given the same ID, or communication conflict may occur.



**NOTE:** The number "0" should locate upwards as shown in above diagram for correct switch definition.

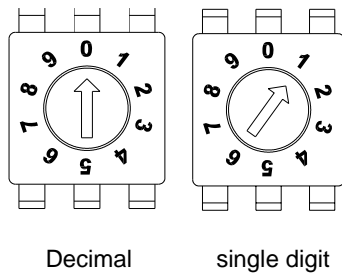
## 2.5 Dome Control Protocol

Protocol is a specific set of rules, procedures used for data communications. Basing on the devices of your surveillance system and define the protocol you are going to use. Generally, use one protocol even the devices are provided from different manufacturers. Use the switch to set your dome control protocol and the baud rate. Refer to below table and turn the arrow to choose a protocol for your speed dome.

Switch No.	Protocol	Baud Rate
00	VCL	9600
01	Pelco D	2400
02	Pelco P	4800
04	Chiper	9600
05	Philips	9600

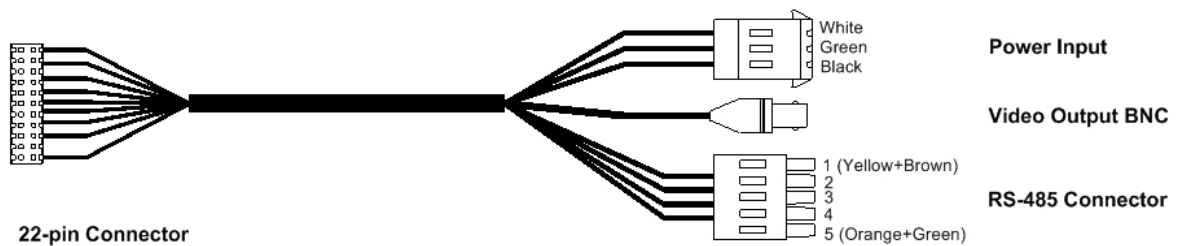
<b>07</b>	ELMO	9600
<b>08</b>	AD422	4800
<b>09</b>	DM P	9600
<b>11</b>	Pelco D	4800
<b>12</b>	Pelco D	9600
<b>13</b>	Pelco P	2400
<b>14</b>	Pelco P	9600
<b>15</b>	JVC	9600
<b>16</b>	GANZ	9600

Select protocol: Pelco D, for instance, the ID switch should be set as below.



## 2.6 22-Pin Connector Definition

A 50-cm data cable (as belowing figure) is shipped with the integrated high speed dome for a quick installation for demo or testing usage.



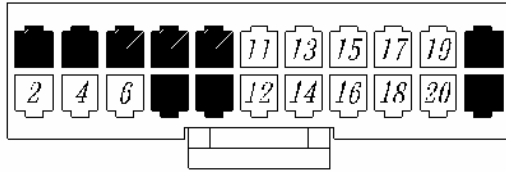
The 22-pin connector definition is listed as below.

No.	Pin	Color	Cable
<b>1</b>	AC24-1	White	1007 20AWG
<b>2</b>	Alarm Pin (Not wired)		
<b>3</b>	AC24-2	Black	
<b>4</b>	Alarm Pin (Not wired)		
<b>5</b>	FG	Green	
<b>6</b>	Alarm Pin (Not wired)		

<b>7</b>	T+	Yellow	1007 24AWG
<b>8</b>	R-	Orange	
<b>9</b>	T-	Green	
<b>10</b>	R+	Brown	
<b>11~20</b>	Alarm Pin (Not wired)		
<b>21</b>	VGND		
<b>22</b>	Video		

## 2.7 Alarm Pin Definition

The alarm pins are serviceable for connecting alarm in- and output devices. Following lists the definition of alarm pin on the 22-pin connector located on the bottom of the dome camera.



Pin	Cable Color	Definition
2	White	ALM NO
4	Black	ALM NC
6	Green	ALM COM
11	Green/Black	ISOG
12	Purple	ALM-1
13	Gray	ALM-3
14	Red	ALM-2
15	Blue	ALM-4
16	Blue/White	ALM-5
17	Brown/White	ALM-6
18	Red/White	ALM-7
19	Purple/White	ALM-8
20	Black/White	ALM GND

## 2.8 RS-485 Connector

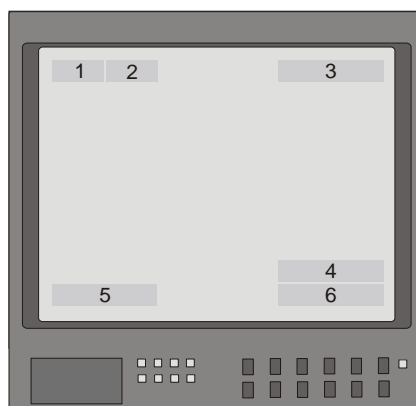
RS-485 is the interface that communicates the dome camera and its control device. Please connect control keyboard to speed dome through the terminal block. The recommended cables for RS-485 communication are **CAT 5** cables; maximum cable length for over 24-gauge wire is 4000 feet (1219 meters). If the total cable length is over 4000 feet, using a repeater to enlarge the signals is recommended.

Definition	Cable Color
T+ (D+)	Yellow
T- (D-)	Green
R+ (D+)	Brown
R- (D-)	Orange

## 3. Operation and Configuration

### 3.1 OSD Display Format

The information shown on the screen are described in terms of OSD display, position and function description in the table below.



Position	Function	OSD Display	Description
1	Focus Modes	A	Auto Focus Mode
		M	Manual Focus Mode
2	Backlight	X	Back Light Compensation OFF
		B	Back Light Compensation ON
3	Alarm	ALARM	Alarm Message
4	Zoom Ratio	×1	Present Zoom Ratio (Optical Zoom→Digital Zoom)
5	Title	<ul style="list-style-type: none"> <li>Maximum 20 characters for each title.</li> <li>16 sets of title are available.</li> </ul>	
6	Camera ID	Show the camera ID	

## 3.2 OSD Menu Tree

The OSD setup menu structure of S and DR models are listed below. The star symbol indicates the factory default.

For detailed function description, please see section [3.3 Configuration Menu](#).

Item	Layer 1	Layer 2	Layer 3	Default
<b>DEFAULT CAMERA</b>	<ON>, <OFF>			ON
<b>BACKLIGHT</b>	ON	BLC Level <000> ~ <100>		
	OFF			☆
<b>FOCUS</b>	AUTO	Focus Length <1cm>, <10cm>, <30cm> <1m>		10 cm
	MANUAL	<01> ~ <08>		
<b>APERTURE</b>	AUTO			☆
	MANUAL	H APERTURE <00> ~ <31>		
		V APERTURE <00> ~ <31>		
<b>AE MODE</b>	AUTO	IRIS OFFSET <00> ~ <99>		50
	SHUTTER	SHUTTER SPEED <1/2> ~ <1/30000>		
	IRIS	IRIS <00> ~ <09>		
	AGC	AGC <00> ~ <05>		
<b>WBC MODE</b>	AUTO			☆
	MANUAL	R Gain <00> ~ <99>		
		B Gain <00> ~ <99>		
<b>ID DISPLAY</b>	<ON>, <OFF>			ON
<b>SETUP MENU</b>	FLIP	<IMAGE>(DR model only), <M.E.>, <OFF>		OFF
	ZOOM SPEED	<FAST>, <SLOW>		Slow
	SPEED BY ZOOM	<ON>, <OFF>		OFF
	AUTO CALI.	<ON>, <OFF>		OFF
	DIGITAL ZOOM	<1> ~ <12>, <OFF>		OFF
	SLOW SHUTTER (DR model only)	<1/2> ~ <1/60> Sec. (NTSC) <1/1.5> ~ <1/50> Sec. (PAL)		1/30
	ANGLE ADJUSTER	ADJUST MIN ANGLE		00
		ADJUST MAX ANGLE		90
		RESET		
	RESET	YES		
	EXIT			
<b>TITLE DISPLAY</b>	<ON>, <OFF>			OFF
<b>TITLE SETTING</b>	<01> ~ <16>			01
<b>ALARM SETTING</b>	ALARM PIN	<1> ~ <8>		1
	ALARM SWITCH	<ON>, <OFF>		OFF
	ALARM TYPE	<N.O.>, <N.C.>		N.C.
	ALARM ACTION	PRESET		☆
		SEQUENCE		
		AUTOPAN		
		CRUISE		



Item	Layer 1	Layer 2	Layer 3	Default
	PRESET POINT SEQUENCE LINE AUTOPAN LINE CRUISE LINE	<001> ~ <256> <1> ~ <8> <1> ~ <4> <1>		001
	DWELL TIME	<001> ~ <127> Sec., ALWAYS		ALWAYS
	EXIT	YES		
HOME SETTING	HOME FUNC.	<ON>, <OFF>		OFF
	SELECT MODE	PRESET		☆
		SEQUENCE		
		AUTOPAN		
		CRUISE		
	PRESET POINT SEQUENCE LINE AUTOPAN LINE CRUISE LINE	<001> ~ <256> <1> ~ <8> <1> ~ <4> <1>		001
	RETURN TIME	<001> ~ <128> Min.		001
	GO	ENTER		
SEQUENCE	EXIT	YES		
	SEQUENCE LINE	<1> ~ <8>		1
	SEQUENCE POINT	<01> ~ <32>		01
	PRESET POS.	<001> ~ <255>, <END>		001
	SPEED	<01> ~ <15>		01
	DWELL TIME	<000> ~ <127> Sec.		000
	RUN SEQUENCE	ENTER		
	EXIT			
AUTOPAN	AUTOPAN LINE	<1> ~ <4>		1
	START POINT	<TO FIND>, <TO SAVE>		
	END POINT	<TO FIND>, <TO SAVE>		
	DIRECTION	<RIGHT>, <LEFT>		Right
	SPEED	<01> ~ <04>		01
	RUN AUTOPAN	ENTER		
	EXIT			
CRUISE	RECORD START			
	RECORD END			
	RUN CRUISE			
	EXIT			
IR FUNCTION (DR model only)	AUTO	THRESHOLD	<LOW>, <MID>, <HI>	LOW
		IR COLOR	<B/W>, <COLOR>	B/W
		EXIT		
	ON			
WDR SETTING (DR model only)	WDR SWITCH	<ON>, <OFF>		OFF
	WDR FUNCTION	AUTO		☆
		MANUAL	RATIO LEVEL <000>~<128>	
			SHUTTER LEVEL <000>~<128>	
			IRIS OFFSET <000>~<128>	
	EXIT			
PRIVACY (DR model only)	PRIVACY SWITCH	<ON>, <OFF>		OFF
	SHADE	<BLACK>, <WHITE>, <GRAY>		Gray
	SET MASK	<1> ~ <8>	H CENTER <000> ~ <256>	
			V CENTER <000> ~ <256>	
			H SIZE <000> ~ <127>	
			V SIZE <000> ~ <127>	

Item	Layer 1	Layer 2	Layer 3	Default
	MASK	<01> ~ <08>		01
	CLEAR+RESET			
	MASK DSIPLAY	<FIRST>, <LAST>		First
	EXIT			
TIME	TIME DISPLAY	<ON>, <OFF>		OFF
	SET YEAR			
	SET MONTH			
	SET DAY			
	SET HOUR			
	SET MINUTE			
	EXIT+SAVE			
SCHEDULE	SCHEDULE SWITCH	<ON>, <OFF>		OFF
	SCHEDULE POINT	<01> ~ <32>		01
	SCHEDULE HOUR			00
	SCHEDULE MIN			00
	SCHEDULE MODE	NONE		☆
		PRESET		
		SEQUENCE		
		AUTOPAN		
		CRUISE		
		IR FUNC.		
	NO FUNCTION			
	PRESET	<1> ~ <256>		
	SEQUENCE LINE	<1> ~ <8>		
	AUTOPAN LINE	<1> ~ <4>		
	CRUISE LINE	<1>		
	IR FUNCTION	<AUTO>, <ON>		
	SCHEDULE RESET			
	SCHEDULE EXIT			
EXIT OSD	YES			

### 3.3 Configuration Menu

The detailed functions and parameter settings of your high speed dome can be set by the OSD (On Screen Display) menu with a control device, such as ELMO control keyboard. The functions in OSD menu are described in the following sections.

#### E/F/U Model

MAIN PAGE 1	
DEFAULT CAMERA	OFF
BACKLIGHT	OFF
FOCUS	AUTO
AE MODE	AUTO
WBC MODE	AUTO
ID DISPLAY	ON
SETUP MENU1	
SETUP MENU2	

#### R/K Model

MAIN PAGE 1	
DEFAULT CAMERA	OFF
BACKLIGHT	OFF
FOCUS	AUTO
APERTURE	AUTO
AE MODE	AUTO
WBC MODE	AUTO
ID DISPLAY	ON
SETUP MENU	ENTER

**To enter the OSD menu** of the selected camera, press <CAMERA MENU> button on the control keyboard and hold for 3 seconds to enter the OSD menu.

**To select the setup item**, use direction keys on keyboard to move the OSD cursor in the OSD menu.

**To setup item**, use direction keys on keyboard to move the OSD cursor in the OSD menu. For items with →, press right/left direction buttons on the control keyboard to select. For items with ↓, press <CAMERA MENU> button on the control keyboard to enter sub menu. For items with →↓, users can use the right/left direction buttons to select functions then press the <CAMERA MENU> button on the control keyboard to enter its sub menu.

For further detailed setup procedures, please refer to the user's manual of your installed control devices.

#### 3.3.1 DEFAULT CAMERA

The DEFAULT CAMERA is used to restore the camera settings (e.g. Backlight/Focus/AE/WBC/Aperature). Once any one of the items is modified, the setting will become <OFF> automatically. Select <ON> for this item to recall the mentioned

camera parameters.

### 3.3.2 BACKLIGHT

The Backlight compensation function prevents the center object from being too dark in surroundings where excessive light is behind the center object.

The Backlight Compensation Level ranges from 000 to 100.

BLC LEVEL	
LEVEL	20
EXIT	YES



**NOTE:** If this function is enabled, the WDR function (for DR model only) will be disabled automatically. For details, refer to section [3.3.19 WDR Setting](#).

### 3.3.3 FOCUS

Automatically adjusts the focus position to maximize the high frequency content of the picture in a center measurement area, taking into consideration the high luminance and strong contrast components. The focus of the dome camera can be operated in two modes: Manual Focus mode and Auto Focus mode. Different settings for various models are described as follows.

- **AUTO**

The optimum focus is achieved by the internal digital circuit. Users can adjust the minimum auto focus range for some special conditions; the options are <1 cm>, <10 cm>, <30 cm> and <1 m>.

- **MANUAL**

In this focus mode, users can adjust the lens focus manually by pressing the Focus Near/Far button on the control keyboard.

FOCUS LENGTH	
TURNING VALUE	10CM
EXIT	YES

### 3.3.4 APERTURE

Sharpness is the subjective evaluation of detail in the picture. With this APERTURE

function, users can adjust the enhancement of the edges of objects in the picture. When shooting text, this function may help by making them sharper and achieve a better image. There are 32 levels of adjustment; the options are <00> ~ <31>, <00> represents “no enhancement”.

- **AUTO**

The dome camera will assign a proper aperture value automatically for camera to achieve a better image.

- **MANUAL**

Select this item if you want to adjust aperture value manually. Higher value enhances the incident ray of camera.

APERTURE MENU	
H APERTURE	15
V APERTURE	15

### 3.3.5

#### AE MODE

The exposure is the amount of light received by the image sensor and is determined by how wide you open the lens diaphragm (iris adjustment), by how long you keep the sensor exposed (shutter speed), and other exposure parameters. With this item, users can define how the Auto Exposure (AE) function works.

- **AUTO**

In this mode, the camera's Shutter, IRIS and AGC control function work automatically to compensate the light exposure of image sensor for consistent video output level. IRIS OFF SET is used to set the level of IRIS variation.

- **SHUTTER**

With this option, the SHUTTER priority is higher than IRIS and AGC; IRIS and AGC circuit will function automatically in cooperating with SHUTTER to get consistent exposure.

- **IRIS**

With this option, the IRIS priority is higher than SHUTTER and AGC; SHUTTER and AGC circuit will function automatically in cooperating with IRIS to get consistent exposure. If the IRIS is modified manually, the action of exposure compensation

depends on the AGC circuit.

- **AGC**

With this option, the AGC priority is higher than SHUTTER and IRIS; SHUTTER and IRIS circuit will function automatically in cooperating with AGC to get consistent exposure. If AGC is adjusted manually, the exposure compensation depends on the changing of IRIS.

### 3.3.6

#### WBC MODE

A digital camera needs to find reference color temperature, which is a way of measuring the quality of a light source, for calculating all the other colors. The unit for measuring this ratio is in degree Kelvin (K). You can select one of the White Balance Control modes according to the condition. The following table shows the color temperature of some light sources.

Light Sources	Color Temperature in K
Cloudy Sky	6,000 to 8,000
Noon Sun and Clear Sky	6,500
Household Lighting	2,500 to 3,000
75-watt Bulb	2,820
Candle Flame	1,200 to 1,500

- **AUTO**

In this mode, white balance works within its color temperature range and calculates the best-fit white balance.

- **MANUAL**

In this mode, users can change the White Balance value manually; adjustable R gain and B gain range from 0 to 99.

WBC MENU		
R GAIN		50
B GAIN		50

### 3.3.7

#### ID DISPLAY

Users are allowed to choose whether the dome ID will be displayed on monitor to identify the domes. For more information, please refer to section [2.4 Dome ID Setting](#).

- **ON**  
Display the ID address of the selected dome on the right bottom of the monitor screen.
- **OFF**  
Hide the ID address of the selected dome.

### 3.3.8

## SETUP MENU

Users can adjust camera lens model parameters under SETUP MENUs. Depending on the model of dome cameras, the SETUP MENUs are different.

### E/F/U Model

SETUP MENU1		SETUP MENU2	
FLIP	ENTER	APERTURE	01
ZOOM SPEED	1	MASK DISPLAY	FIRST
SPEED BY ZOOM	OFF		
AUTO CALI.	OFF		
DIGITAL ZOOM	12		
SLOW SHUTTER	OFF		
ANGLE ADJUSTER	ENTER		
RESET	YES		
EXIT	YES		

### R/K Model

SETUP PAGE	
FLIP	ON
ZOOM SPEED	FAST
SPEED BY ZOOM	ON
AUTO CALI.	OFF
DIGITAL ZOOM	12
SLOW SHUTTER	1/2
ANGLE ADJUSTER	ENTER
RESET	YES
EXIT	YES

- **FLIP (IMAGE/ME/OFF)**  
User can track an object continuously when it passes through under dome camera with setting Flip to IMAGE (digital flip) or M.E. (mechanical flip).

FLIP SETTING	
FLIP	OFF
EXIT	YES

## IMAGE

IMAGE represents digital IMAGE FLIP, enables users to keep tracking object seamlessly and no delay occurs in comparing with mechanical flip.



**NOTE:** The Privacy Mask function will be automatically disabled if the Image Flip function is enabled, and “Masking will be disabled” will be displayed on the screen.

#### **M.E.**

The item is a standard mechanical operation. As the dome tilts 90°, it will pan 180°, then continuing tilt to keep tracking object.

#### **OFF**

Select this item to disable the flip function.



**NOTE:** The dome will only be able to tilt 90°, or -10° ~100° with angle adjuster adjustments.

- **ZOOM SPEED**

This item is used to set the zoom speed for operating the dome camera.

The options are <FAST> and <SLOW> (default).

- **SPEED BY ZOOM**

If the item is set to <ON>, the pan/tilt speed will be adjusted by internal algorithm when zooming automatically. The larger zoom ratio leads the lower rotation speed.

- **AUTO CALIBRATION**

There are one horizontal and one vertical infrared rays check points in each dome. When the dome camera position may be moved during installation or maintenance, the relative distance between the original set point and the check point has been changed. Enable the Auto Calibration function, the dome will automatically detect that and reset the point back to the original position.

- **DIGITAL ZOOM**

With this item, users can enable or disable the 12x Digital Zoom. The Digital Zoom activate after the full Optical Zoom level is reached.



**NOTE:** The difference between optical and digital zoom is that optical zoom uses the lens within the camera to draw the image closer via zoom in or out to achieve the desired effect. Optical zoom remains the same and the full



resolution of the zoomed image quality. On the other hand, Digital zoom takes a portion of image and expands that image to the full size of the image; however the image quality will be reduced.

Digital zoom ratio is adjustable from <1> to <12>.

- **SLOW SHUTTER**

The shutter speed determines how long the image sensor is exposed to light. To see clear image in a dark environment, enable this function and select a slower shutter speed.

The shutter speed is adjustable on DR model. With the slowest shutter speed, users can see objects in a dark environment under 0.2 lux; or see a smooth video image with a higher shutter speed. The options are from <1/2> to <1/60>.

- **ANGLE ADJUSTER**

The item is for adjusting the camera view angle. The ranges of view angle are changed in different FLIP mode: the angle ranges from -10° to +100° with ME FLIP and FLIP OFF modes, and from -10° ~ +190° with IMAGE FLIP mode. With IMAGE FLIP function, users are able to adjust the view angle from -10° ~ +190° to catch the true horizontal line.

ANGLE ADJUSTER	
ADJUST MIN ANGLE	-10 DEG
ADJUST MAX ANGLE	100 DEG
EXIT+SET	YES

- **RESET**

Select this item to reset all the camera parameters of SETUP MENU1 to the factory default.

- **EXIT**

Exit the SETUP MENU1 and go back to MAIN MENU.

### 3.3.10 TITLE DISPLAY

Users are allowed to name a certain view area and display its title for easy recognition. At this item, users can choose to display or not to display the titles set in advance.

- **ON**

A title set for certain view will be displayed when the dome back to the view area.

- **OFF**

When the TITLE DISPLAY is set <OFF>, no title will be displayed on the screen even titles are set in advance.

### 3.3.11 TITLE SETTING

Up to 16 zone titles can be set with maximum 20 characters for each title; two mask zones are allowed to set in a view area. Users can name the zone titles with privacy mask ID numbers for future recognition.



**NOTE:** For DR model, the available area for setting privacy mask is restricted within tilt angle 45°.

Follow the steps to set a camera title.

STEP 1: Operate dome to certain view area where you want to set a title for it.

STEP 2: Turn on OSD and select <TITLE SETTING>.

STEP 3: Select a number to indicate the view area.

STEP 4: Press <ENTER> to go into editing mode.

TITLE SETTING: 01										
0	1	2	3	4	5	6	7	8	9	EXIT
A	B	C	D	E	F	G	H	I	J	SAVE
K	L	M	N	O	P	Q	R	S	T	LEFT
U	V	W	X	Y	Z	:	/	.	,	RIGHT
[	]	+	?	-						DELETE
TITLE: ABC										

STEP 5: Choose a character with direction keys and then press <ENTER> to input.

Example: <A> <ENTER>, <B> <ENTER>, <C> <ENTER>

TITLE: ABC

STEP 6: To delete entered characters, move the cursor to <LEFT> or <RIGHT> and press <ENTER> to select a character in entry field, then move the cursor to

<DELETE> and press <ENTER> to delete the selected character.

STEP7: When the setting is completed, move the cursor to <SAVE> and press <ENTER> to save.

### 3.3.12 ALARM SETTING

The integrated high speed dome provides eight alarm inputs and two alarm outputs (N.O. and N.C) to connect alarm devices. With this function, dome will cooperates with alarm system to catch the event images. For wiring, please refer to the installation guide and/or qualified service personnel. Alarm parameters can be set on this page.

ALARM SETTING	
ALARM PIN	1
ALARM SWITCH	OFF
ALARM TYPE	N.C.
ALARM ACTION	PRESET
PRESET POINT	001
DWELL TIME	ALWAY
EXIT	YES

- ALARM PIN**

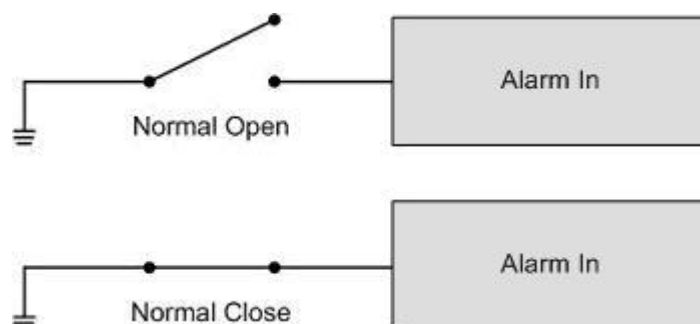
The dome provides 8 alarm inputs and 2 outputs (1× N.O. and 1× N.C.). Select an alarm connector which you want to set its alarm-related parameters with this item, and then set its alarm-related parameters in Alarm Setting menu. For alarm pin definitions, please refer to section [2.6 Alarm Pin Definition](#) or installation guide.

- ALARM SWITCH**

The item is used to enable or disable the selected alarm pin function. Use the left/right direction keys on the control keyboard to change the setting.

- ALARM TYPE**

There are two kinds of alarm types: Normal Open and Normal Close, which are illustrated as below. Select an alarm type that corresponds with the alarm application.



- **ALARM ACTION**

Select one of these modes that choose a kind of actions that should be executed when an alarm is triggered. The alarm actions can be set to execute the preset position, sequence, auto-pan or cruise function. Use the right direction key of the control keyboard to change the setting, and the bellowing items will change in cooperating with your selection.

- **PRESET**

Select a preset point where the dome should go when an alarm pin is triggered. The Preset points can be set by a control keyboard.

**SEQUENCE**

Select a sequence line that the dome camera should execute when alarm pin is triggered. The Sequence line should be defined prior in SEQUENCE setup menu.

**AUTOPAN**

Select an auto-pan line that the dome camera should execute when alarm pin is triggered. The Auto-pan line can be defined in setup AUTOPAN menu.

**CRUISE**

Select a cruise line that the dome camera should execute when alarm pin is triggered. The Cruise line can be defined in CRUISE setup menu.

- **DWELL TIME**

The DWELL TIME is the duration of executing ALARM ACTION: Preset or Sequence. When alarm takes place, the dome will go to the preset position or execute sequence function and stay at each sequence point for a period of time (1~127 seconds). If select <Always>, the dome will go to the preset position and stay there until alarm condition is released or users rotate the dome.



**NOTE:** The DWELL TIME is only accessible when selecting ALARM ACTION: Preset or Sequence.

- **EXIT**

Exit the ALARM SETTING menu.

### 3.3.13

#### **HOME SETTING**

Users are able to set an operation mode to ensure constant monitoring; if the dome idles for a period of time, the pre-set function will be activated automatically, this is the HOME function. HOME function allows constant and accurate monitoring, to avoid the dome

stops or missing events.

HOME SETTING	
HOME FUNCTION	OFF
SELECT MODE	PRESET
PRESET POINT	001
RETURN TIME	001
GO	ENTER
EXIT	YES

- **HOME FUNCTION**

The item is used to enable or disable the HOME function. Use the left/right direction keys of the control keyboard to change the setting.

- **SELECT MODE**

Select one of the modes that the dome should execute when HOME function is enabled and the RETURN TIME is up. The options are <AUTOPAN>, <SEQUENCE>, <CRUISE> and <PRESET>. Use the left/right direction keys of the control keyboard to change the setting, and the following items will change in cooperating with your selection.

- **PRESET**

Select a preset point where the dome should go when alarm pin is triggered.

### **SEQUENCE**

Select a sequence line that the dome camera should execute when an alarm pin is triggered. The Sequence line should be defined prior in SEQUENCE setup menu.

### **AUTOPAN**

Select an auto-pan line that the dome camera should execute when alarm pin is triggered. The Auto-pan line can be defined in AUTOPAN setup menu.

### **CRUISE**

Select a cruise line that the dome camera should execute when alarm pin is triggered. The Cruise line can be defined in CRUISE setup menu.

- **RETURN TIME**

The dome starts to count down RETURN TIME when the dome idles, and will execute the SELECT MODE function if the return time is up. The RETURN TIME ranges from 1 to 128 minutes.

- **GO**

If HOME function is enabled, the users are allowed to execute HOME function

manually by selecting this item.

- **EXIT**

Exit the HOME SETTING menu.

### 3.3.14 SEQUENCE

The function executes pre-positioning of the pan, tilt, zoom and focus features in a certain sequence for a camera. Before set up this function, users must setup at least two preset points.

SEQUENCE	
SEQUENCE LINE	1
SEQUENCE POINT	01
PRESET POSITION	001
SPEED	1
DWELL TIME	001
RUN SEQUENCE	ENTER
EXIT	YES

- **SEQUENCE LINE**

There are eight sets of sequence lines built in the dome camera. Using LEFT/RIGHT direction keys to select a line first and then set its sequence points.

- **SEQUENCE POINT**

Up to 32 points can be specified for each sequence line. The sequence points represent the orders of the preset points that the dome will automatically run, and the bellowing setup items; PRESET POSITION, SPEED, and DWELL TIME, are related to this item.

- **PRESET POSITION**

Users can assign a specific preset position to the selected sequence point with this item.

- **SPEED**

Users can set the Speed that the dome goes to the next sequence point, and the setup speed range is from 1 ~ 15. Refer to below table for more information.

	PAN (degree/sec.)	TILT (degree/sec.)
Speed 1	10	8
Speed 2	23	12
Speed 3	35	22

<b>Speed 4</b>	45	30
<b>Speed 5</b>	55	40
<b>Speed 6</b>	65	50
<b>Speed 7</b>	75	58
<b>Speed 8</b>	185	185
<b>Speed 9</b>	205	210
<b>Speed 10</b>	225	240
<b>Speed 11</b>	250	275
<b>Speed 12</b>	280	305
<b>Speed 13</b>	320	335
<b>Speed 14</b>	365	365
<b>Speed 15</b>	400	400

- **DWELL TIME**

The DWELL TIME is the duration time that the dome will stay at the sequence point, and the range is from <0> to <127> seconds. The dome will go to the next sequence point when the DWELL TIME is up. If the setting is <0>, the dome will stay at this sequence point until users manually move the dome.

- **RUN SEQUENCE**

User can command the dome camera to run the selected Sequence line manually.

- **EXIT**

Select the item to exit the SEQUENCE menu.

### 3.3.15 AUTOPAN

Auto-pan means rotating or scanning side-to-side motion by a dome camera to view an area horizontally. The parameters can be set on this page.

AUTOPAN	
AUTOPAN LINE	1
START POINT	TO FIND
END POINT	TO FIND
DIRECTION	RIGHT
SPEED	1
RUN AUTOPAN	ENTER
EXIT	YES

- **AUTOPAN LINE**

There are four sets of auto-pan lines built in dome camera. Users can choose a line to execute using LEFT/RIGHT direction keys. Users are able to command the dome camera to do continuously panning without limit by setting the start point the same

as endpoint.

- **START POINT**

Follow the description to set the start position of the AUTOPAN path.

1. Move the cursor to <START POINT> and press <ENTER> while <TO FIND> item flashes, the item will turn <TO SAVE> automatically.
2. Move the dome to a desired position and press <ENTER> to save the position as the start point; the cursor will move to <END POINT> automatically. Ensure to set the end point to complete the auto-pan setting.



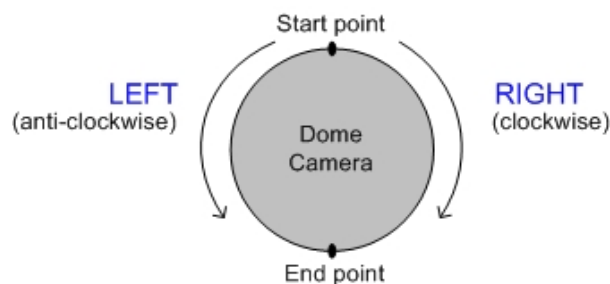
**NOTE:** The tilt and zoom value of the start point will be recorded and fixed for the selected auto-pan line.

- **END POINT**

Users are able to set the end point after the start point is defined. Pan the dome to another position and press <ENTER> to save the position as the end point.

- **DIRECTION**

The item is for setting the AUTOPAN direction of dome camera. The dome will start to pan clockwise from the start point to the end point if your selection is <RIGHT>, and then return to the start point. The dome will start to pan anti-clockwise from the start point to the end point if your selection is <LEFT>. Refer to below diagram.



- **SPEED**

The item is for defining the dome camera rotation speed while running auto-pan. The speed is adjustable from 1 to 4; refer to the table below for details.

	PAN (degree/sec.)
Speed 1	10
Speed 2	23



<b>Speed 3</b>	35
<b>Speed 4</b>	45

- **RUN AUTOPAN**

After the setting is completed, select this item to manually execute the Auto-pan function.

- **EXIT**

Exit the AUTOPAN setup menu.

### 3.3.16

## CRUISE

A Cruise is a route of manual operations that can be stored and recalled to execute repeatedly. It can be formed of pan, tilt position.

CRUISE	
RECORD START	ENTER
RECORD END	ENTER
RUN CRUISE	ENTER
EXIT	YES

- **RECORD START**

Follow the description to record the CRUISE path.

1. Rotate the dome camera to a desired view area, and press <ENTER> to build the cruise path using joystick on the control device. The percentage of the memory buffer will be displayed on the screen.



**NOTE:** Beware of the memory size when building the cruise path. After the percentage of the buffer becomes 100%, the path will not be recorded.

- **RECORD END**

The cursor will be moved to RECORD END while building the cruise line; when the setting is completed, press <ENTER> to save the path.

- **RUN CRUISE**

After the setting is completed, select this item to manually execute the Cruise function.

- **EXIT**

Exit the CRUISE setup menu.

### 3.3.17 IR FUNCTION (Removable IR Cut)

With the IR cut filter, the dome can still catch clear image at night time or very dark light condition. During day time, the IR cut filter will be on to block the infrared light for clear image; during night time, the IR cut filter will be removed to catch infrared light to view images in black and white. Only with DR model, users are able to view color images when the IR function activated.

Refer to the description to operate the removable IR cut filter.

IR FUNCTION	
THRESHOLD	LOW
IR COLOR	COLOR
EXIT	YES

- **AUTO**

The Internal circuit will automatically decide the occasion to remove the IR cut filter according to the image brightness level.

#### **THRESHOLD**

The dome will remove the filter immediately when the threshold value is reached. The threshold options are <LOW>, <MID> and <HI>. <LOW> threshold indicates a higher sensitivity and can improve the reliability of lens.

#### **IR COLOR**

When IR function is enabled, the video output can be programmed as color or B/W.

- **ON**

Select the item to remove the IR cut filter.

### 3.3.19 WDR Setting (DR Model Only)

The Wide Dynamic Range function is especially effective in solving indoor and outdoor contrast issues to enhance better image quality and video performance. It enables the dome to catch detailed data from the dark part (Indoor) without any saturation from the bright part (Outdoor). The parameter of WDR function can be set on this page.



**NOTE:** The Backlight function will automatically turned off when the WDR

function is enabled, because the WDR function has better effect than the Backlight compensation.

WDR SETTING	
WDR SWITCH	OFF
WDR FUNCTION	AUTO
EXIT	YES

- **WDR SWITCH**

Enable or disable the WDR function with the item.

- **WDR FUNCTION**

This item is used to define the WDR function mode.

**AUTO**

If select <AUTO>, the dome camera operates the WDR function automatically.

**MANUAL**

Users are allowed to adjust WDR function manually by defining the RATIO LEVEL, SHUTTER SPEED and IRIS OFFSET value.

WDR MODE	
RATIO LEVEL	000
SHUTTER SPEED	000
IRIS OFFSET	000
EXIT	YES

- **EXIT**

Exit this setup menu.

### 3.3.20

#### PRIVACY

The Privacy Mask function aims to avoid any intrusive monitoring. Users can adjust the camera view position using joystick, and adjust the mask size and area via the direction keys on control keyboard. The dome camera will memorize the center of the selected view as an original point, so the joystick will be locked as users enter the Privacy Setup menu. Refer to the description for setting Privacy masks.



**NOTE:** The Image Flip function will be disabled automatically while the Privacy function is enabled.

PRIVACY	
PRIVACY SWITCH	ON
SHADE	GRAY
SET MASK	01
MASK CLEAR+RESET	01
MASK DISPLAY	FIRST
EXIT	YES

- **PRIVACY SWITCH**

The item is used to enable or disable masking function. Set this item to <ON> before configuring mask zone.

- **SHADE**

The color of privacy mask can be selected through this item. The available colors are black, gray and white.

- **SET MASK**

After pressing <ENTER> on this item, dome will memorize this position as privacy mask position, up to 8 masks can be set. The model restricts the mask zones to be set too close with each other.

MASK01 MENU	
H CENTER	000
V CENTER	000
H SIZE	000
V SIZE	000
EXIT+SAVE	YES

**H CENTER (000~256)**

The original center of mask zone is the center of screen. User can move the center of mask zone to another position through adjust this value by pressing the LEFT/RIGHT keys.

**V CENTER (000~256)**

The original center of mask zone is the center of screen. User can move the center of mask zone to another position through adjust this value by pressing the LEFT/RIGHT keys.

**H SIZE (000~127)**

User can adjust the horizontal size of privacy mask through this item. Set the H and V size to 0 can also delete the selected mask.

**V SIZE (000~127)**

User can adjust the vertical size of privacy mask through this item. Set the H and V size to 0 can also delete the selected mask.

- **MASK CLEAR+RESET**

The item is used to clear the mask settings of the selected privacy mask. Use LEFT/RIGHT direction keys to select a mask and press <ENTER> to erase its configuration.

- **MASK DISPLAY**

This item is used to set the occasion to display privacy mask.

**FIRST**

If select this mode, the camera will detect the mask zone of the next preset position and display the mask in advance, then pan the dome to the preset point.

**LAST**

If select this mode, the camera will move the dome to the preset point, then display the mask zone.



**NOTE:** For DR model, the available area for setting privacy mask is restricted within tilt angle 45°, and two mask zones are allowed to set in a view area.

- **EXIT**

Exit this page.

### 3.3.21

#### **TIME FUNCTION**

The item is used to set the TIME related parameters of the integrated high speed dome.

TIME SETTING	
TIME DISPLAY	OFF
SET YEAR	05
SET MONTH	10
SET DAY	02
SET HOUR	12
SET MINUTE	12
EXIT+SAVE	YES

- **TIME DISPLAY**

Select <ON> to display the Time information on screen, or <NO> not to display.

- **YEAR / MONTH / DAY**

The items are for setting up the system date.

- **HOURL / MINUTE**

The items are for setting up the system time.

- **EXIT+SAVE**

Exit this page.

### 3.3.22 SCHEDULE FUNCTION

The unique Scheduling function enables users to program a preset point or function (Sequence/Auto-pan/Cruise) automatically actions in certain period of time.

SCHEDULE	
SCHEDULE SWITCH	ON
SCHEDULE POINT	01
SCHEDULE HOUR	11
SCHEDULE MINUTE	53
SCHEDULE MODE	PRESET
PRESET POINT	001
SCHEDULE RESET	YES
SCHEDULE EXIT	YES

- **SCHEDULE SWITCH**

Select <ON> to enable the Schedule function or <OFF> to disable.

- **SCHEDULE POINT**

Users are allowed to set up 32 schedule points.

- **SCHEDULE HOUR / MINUTE**

The items are for setting up the time of schedule points.

- **SCHEDULE MODE**

This is for setting the Schedule function of the selected schedule point; the options are as follows.

**NONE**

No function will be executed for the schedule by selecting the item.

**PRESET**

Select one of the defined preset points for the selected schedule.

**SEQUENCE**

Select one of the eight defined sequence lines for the schedule.

**AUTOPAN**

Select one of the four defined auto-pan lines for the selected schedule.

**CRUISE**

Enable the Cruise function for the selected schedule.

#### **IR FUNCTION**

Select <AUTO> or <ON> to enable the function for the schedule.

### **3.3.23 EXIT OSD**

To exit the OSD setup menu, users can either select this item, or press the ESC button on control keyboard quickly.

## Appendix A: Technical Specification

All specifications are subject to change without notice.

Items		S Model		DR Model	
CAMERA					
Effective Pixels	NTSC	380k			
	PAL	440k			
Horizontal Resolution	NTSC	470 TV lines		470 TV lines	
	PAL	460 TV lines		470 TV lines	
Scanning Area		Progressive 1/4" CCD		Progressive 1/4" CCD	
Scanning System		PAL, NTSC			
Synchronization		Internal / Line Lock			
Video Output		1.0 Vp-p / 75Ω , BNC			
S/N Ratio (AGC OFF)		More than 49dB			
Minimum Illumination		1 lux		0.01 lux, 0 lux (IR illuminator)	
Focal Length		4~88 mm		3.6~82.8 mm	
Zoom Ratio		22× optical zoom		23× optical zoom	
Digital Zoom		×1 ~ ×12 variable			
Focus Mode		Auto / Manual			
White Balance		Auto / Manual			
Iris Control		Auto / Manual			
Electronic Shutter	NTSC	1/2~1/4k sec.		1/2~1/4k sec.	
	PAL	1/1.5~1/4k sec		1/1.5~1/4k sec	
AGC control		Auto / Manual			
Back Light Compensation		On / Off			
OPERATION					
Built-in Protocol		ELMO, Pelco, VCL, Philips, AD-Manchester, AD-422, etc.			
Pan Travel		360° endless			
Tilt Travel		-10°~100°		-10°~190°	
Manual Speed		1°~90°/s			
Presets		256			
Preset Accuracy	Pan	0.225°			
	Tilt	0.45°			
Preset Speed**	Pan	5°~400°/s, High Resolution (Both D&E Type Motor)			
	Tilt	5°~400°/s, Standard Resolution (D Type Motor). 5°~400°/s, High Resolution (E Type Motor)			
Cruise		1			
Sequence		8			
Auto Pan		4			
Privacy Mask		-		8	
Pan & Tilt Proportional to Zoom Ratio		Yes		Yes	
P/T/Z Auto-Restoring		Yes		Yes	
Auto Turn Around		Yes		Yes	
Zone Title		Yes		Yes	
Home Function		Yes		Yes	
Digital Flip		-		Yes	
Digital Slow Shutter		-		Yes	
Motion Detection		-		-	
Wide Dynamic Range		-		Yes	
Day/Night: IR Cut Filter		-		Yes	

\*\*There are D&E motors, differentiated by the type of motors of high speed dome cameras and presents various "Preset Speed" and



resolutions. Standard Resolution: 768 steps/circle. High Resolution: 1600 steps/circle

GENERAL		
	Environment	Indoor
	Controller Interface	RS-485
	Operating Temperature	0°C~40°C (32°F~104°F)
	Dimension	Ø131×226mm (5.2x7.6 Inches)
	Weight	1.6kg (3.5 lbs)
	Power Source	AC 24 V
	Power Consumption	30 W
	Regulatory	CE, FCC

## OSD Menu Notes

The following OSD menu tables are provided for users to record the dome settings.

Item	Layer 1	Layer 2	Layer 3	Note
DEFAULT CAMERA	<ON>, <OFF>			
BACKLIGHT	ON	BLC Level <000> ~ <100>		
	OFF			
FOCUS	AUTO	Focus Length <1cm>, <10cm>, <30cm> <1m>		
	MANUAL	<01> ~ <08>		
APERTURE	AUTO			
	MANUAL	H APERTURE <00> ~ <31>		
		V APERTURE <00> ~ <31>		
AE MODE	AUTO	IRIS OFFSET <00> ~ <99>		
	SHUTTER	SHUTTER SPEED <1/2> ~ <1/30000>		
	IRIS	IRIS <00> ~ <09>		
	AGC	AGC <00> ~ <05>		
WBC MODE	AUTO			
	MANUAL	R Gain <00> ~ <99>		
		B Gain <00> ~ <99>		
ID DISPLAY	<ON>, <OFF>			
SETUP MENU	FLIP	<IMAGE>(DR model only), <M.E.>, <OFF>		
	ZOOM SPEED	<FAST>, <SLOW>		
	SPEED BY ZOOM	<ON>, <OFF>		
	AUTO CALI.	<ON>, <OFF>		
	DIGITAL ZOOM	<1> ~ <12>, <OFF>		
	SLOW SHUTTER (DR model only)	<1/2> ~ <1/60> Sec. (NTSC) <1/1.5> ~ <1/50> Sec. (PAL)		
	ANGLE ADJUSTER	ADJUST MIN ANGLE		
		ADJUST MAX ANGLE		
		RESET		
	RESET	YES		
	EXIT			
TITLE DISPLAY	<ON>, <OFF>			
TITLE SETTING	<01> ~ <16>			
ALARM SETTING	ALARM PIN	<1> ~ <8>		
	ALARM SWITCH	<ON>, <OFF>		
	ALARM TYPE	<N.O.>, <N.C.>		
	ALARM ACTION	PRESET		
		SEQUENCE		
		AUTOPAN		
		CRUISE		
	PRESET POINT	<001> ~ <256>		
	SEQUENCE LINE	<1> ~ <8>		
	AUTOPAN LINE	<1> ~ <4>		
	CRUISE LINE	<1>		
	DWELL TIME	<001> ~ <127> Sec., ALWAYS		
	EXIT	YES		
HOME SETTING	HOME FUNC.	<ON>, <OFF>		
	SELECT MODE	PRESET		
		SEQUENCE		
		AUTOPAN		
		CRUISE		
	PRESET POINT	<001> ~ <256>		
	SEQUENCE LINE	<1> ~ <8>		
	AUTOPAN LINE	<1> ~ <4>		
	CRUISE LINE	<1>		
	RETURN TIME	<001> ~ <128> Min.		
	GO	ENTER		
	EXIT	YES		
SEQUENCE	SEQUENCE LINE	<1> ~ <8>		

Item	Layer 1	Layer 2	Layer 3	Note
	SEQUENCE POINT	<01> ~ <32>		
	PRESET POS.	<001> ~ <255>, <END>		
	SPEED	<01> ~ <15>		
	DWELL TIME	<000> ~ <127> Sec.		
	RUN SEQUENCE	ENTER		
	EXIT			
AUTOPAN	AUTOPAN LINE	<1> ~ <4>		
	START POINT	<TO FIND>, <TO SAVE>		
	END POINT	<TO FIND>, <TO SAVE>		
	DIRECTION	<RIGHT>, <LEFT>		
	SPEED	<01> ~ <04>		
	RUN AUTOPAN	ENTER		
	EXIT			
CRUISE	RECORD START			
	RECORD END			
	RUN CRUISE			
	EXIT			
IR FUNCTION (DR model only)	AUTO	THRESHOLD	<LOW>, <MID>, <HI>	
		IR COLOR	<B/W>, <COLOR>	
		EXIT		
	ON			
WDR SETTING (DR model only)	WDR SWITCH	<ON>, <OFF>		
	WDR FUNCTION	AUTO		
		MANUAL	RATIO LEVEL <000>~<128>	
			SHUTTER LEVEL <000>~<128>	
			IRIS OFFSET <000>~<128>	
	EXIT			
PRIVACY (DR model only)	PRIVACY SWITCH	<ON>, <OFF>		
	SHADE	<BLACK>, <WHITE>, <GRAY>		
	SET MASK	<1> ~ <8>	H CENTER <000> ~ <256>	
			V CENTER <000> ~ <256>	
			H SIZE <000> ~ <127>	
			V SIZE <000> ~ <127>	
	MASK CLEAR+RESET	<01> ~ <08>		
	MASK DISPLAY	<FIRST>, <LAST>		
	EXIT	YES		
TIME	TIME DISPLAY	<ON>, <OFF>		
	SET YEAR			
	SET MONTH			
	SET DAY			
	SET HOUR			
	SET MINUTE			
	EXIT+SAVE			
SCHEDULE	SCHEDULE SWITCH	<ON>, <OFF>		
	SCHEDULE POINT	<01> ~ <32>		
	SCHEDULE HOUR			
	SCHEDULE MIN			
	SCHEDULE MODE	NONE		
		PRESET		
		SEQUENCE		
		AUTOPAN		
		CRUISE		
		IR FUNC.		
	NO FUNCTION	<1> ~ <256>		
	PRESET	<1> ~ <8>		
	SEQUENCE LINE	<1> ~ <4>		
	AUTOPAN LINE	<1>		
	CRUISE LINE	<1>		
	IR FUNCTION	<AUTO>, <ON>		
	SCHEDULE RESET			
	SCHEDULE EXIT			
EXIT OSD	YES			



ELMO USA Corp.  
1478 Old Country Rd.  
Plainview, NY 11803